

CLAIMS

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent is:

1. A liquid crystal display device comprising:

a liquid crystal cell which forms an image display area on a substrate; and

a driver for applying a voltage to said liquid crystal cell based on an input video signal, wherein said driver includes a plurality of driver ICs that are mounted on said substrate and are cascade-connected using signal lines.

2. The liquid crystal display device according to claim 1, wherein said driver includes said plurality of driver ICs that are cascade-connected to a power feed line via metal layer of each of said driver ICs.

3. The liquid crystal display device according to claim 1, wherein said driver ICs receive video signal consisting of serial data, and wherein said video signal is synchronized based on a synchronization pattern included in said serial data.

4. A liquid crystal display device comprising:

a liquid crystal cell which forms an image display area on a substrate; and

a driver for distributing an input video signal to a plurality of chain-connected driver ICs, and for applying a voltage to said liquid crystal cell by employing said driver ICs,

wherein said driver distributes said video signal to said plurality of driver ICs with providing a masking signal from an upstream driver IC to a downstream driver IC of said plurality of driver ICs, wherein said masking signal masks said video signal to be provided by said upstream driver IC.

5. The liquid crystal display device according to claim 4, wherein said downstream driver IC of said driver applies a voltage to said liquid crystal cell in accordance with said input video signal after receiving said masking signal from said upstream driver IC.

5 6. A liquid crystal display device comprising:

a liquid crystal cell which forms an image display area on a substrate; and
a driver for distributing an input video signal to a plurality of driver ICs that are cascade-connected, and for applying a voltage to said liquid crystal cell by employing said driver ICs,

10 wherein said plurality of driver ICs of said driver are cascade-connected by a video transmission line provided on said substrate, and are controlled by serial data that are transmitted along said video transmission line.

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7. The liquid crystal display device according to claim 6, wherein said video transmission line connecting said plurality of driver ICs comprises a first signal line, and a second signal line for which the polarity of said first signal line has been inverted.

8. The liquid crystal display device according to claim 6, wherein said driver further 20 comprises a clock line and a power line which makes a cascade-connection to said plurality of driver ICs.

9. The liquid crystal display device according to claim 6, wherein, of said driver ICs, an upstream driver IC includes a dummy circuit for substantially matching a video 25 phase and a clock phase.

10. A liquid crystal controller comprising:

a receiver for receiving a video signal from a host to display an image;
a sequencer for, upon the receipt of a control signal from said host, generating header information for packet data that are to be output to an LCD driver comprising a plurality of driver ICs which are cascade-connected; and

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output means for converting said video signal received from said receiver into a serial video signal, for adding said header information generated by said sequencer to said serial video signal, and for outputting the resultant serial video signal to said LCD driver.

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11. The liquid crystal controller according to claim 10, wherein said sequencer generates said header information by which said driver ICs of said LCD driver are synchronized with each other, and wherein said output means provide said header information used for synchronization during a horizontal blanking period.

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12. A video signal transmission method, for transmitting a video signal to an LCD driver which has a plurality of driver ICs, comprising the steps of:

transmitting a video signal, including a horizontal blanking period, to said driver ICs via a serial interface; and

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transmitting a synchronization pattern during said horizontal blanking period in order to synchronize said video signal for said driver ICs.

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13. The video signal transmission method according to claim 12, wherein said synchronization pattern is transmitted for at least at two cycles, and wherein, during

the period in which said video signal is transmitted, said driver ICs conform to said synchronization pattern.

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14. A video signal transmission method, for transmitting a video signal to an LCD driver which has a plurality of driver ICs that are cascade-connected, comprising the steps of:

transmitting a video signal via a serial interface to said driver ICs that are cascade-connected; and

applying to an LCD a voltage based on said video signal that is received and that is to be processed by each of said driver ICs;

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wherein said video signal is constituted by bit blocks having a plurality of attributes and wherein said driver ICs are controlled by using said bit blocks.

15. The video signal transmission method according to claim 14, wherein one of said bit blocks includes a wait command for waiting for said driver ICs, and wherein said wait command is generated by each of said driver ICs that processes said video signal,
5 and is transmitted to a downstream driver IC that is cascade-connected.

16. The video signal transmission method according to claim 14, wherein said video signal is transmitted to said LCD driver by using a packet, and wherein said plurality of driver ICs are controlled by a protocol that employs the header of said packet.